

ASCEND PSIF FINAL REPORT

Understanding challenges and opportunities of Community Health Workers operating in times of COVID-19

Methodology

ASCEND is managed geographically in two lots. Lot 1 focuses on 11 countries in East and Southern Africa and South Asia: Bangladesh, Ethiopia, Kenya, Malawi, Mozambique, Nepal, Sudan, South Sudan, Tanzania, Uganda, Zambia. We gratefully acknowledge the financial support provided by the UK Foreign Commonwealth and Development Office (FCDO) to fund the ASCEND programme.

Lot 1

Contents

- 1. Background..... 1
- 2. Justification..... 1
- 3. Aim and research questions 2
- 4. Detailed description of methodology and tools 3
- 5. Implemented activities and results..... 6
- 6. Summary of lessons learned.....11
- 7. Way forward13
- Acknowledgements14
- References.....15
- Annex 116
- Annex 218
- Annex 324
- Annex 446

Acronyms

Abt	Abt Associates
ASCEND	Accelerating Sustainable Control and Elimination of Neglected Tropical Diseases
BCC	Behaviour change communication
CDDs	Community drug distributors
CHWs	Community health workers
CL	Country lead
FGD	Focus group discussion
IEC	Information, education and communication
IRB	Institutional review body
IU	Implementation unit
KIT	Royal Tropical Institute
M&E	Monitoring and evaluation
MDA	Mass drug administration
MMDP	Morbidity management and disability prevention
MoH	Ministry of Health
NGO	Non-Government Organisation
NTDs	Neglected tropical diseases
PI	Principal investigator
PPE	Personal protective equipment
PSIF	Policy Strategic Investment Fund
QA	Quality assurance
SOPs	Standard operating procedures
RAMA	Risk Assessment and Mitigation Action
RL	Regional lead
VL	Visceral leishmaniasis
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation

1. Background

About ASCEND

The FCDO-funded Accelerating Sustainable Control and Elimination of Neglected Tropical Diseases (ASCEND) programme is a £200 million investment from the UK government to advance the impact and sustainability of national programmes tackling neglected tropical diseases (NTDs). The programme consists of two lots – one focusing on South Asia, East and Southern Africa (Lot 1) and the other on West and Central Africa (Lot 2). ASCEND Lot 1 is implemented by a consortium of technical partners, led by Crown Agents with partners including Abt Associates (Abt), Oriole Global Health and the Royal Tropical Institute (KIT). The objective of ASCEND Lot 1 is to strengthen key elements of the national health systems which are required for sustainable NTD control and elimination across 11 priority countries including: Bangladesh, Ethiopia, Kenya, Malawi, Mozambique, Nepal, Sudan, South Sudan, Tanzania, Uganda and Zambia. The programme focusses on five NTDs, including: lymphatic filariasis, onchocerciasis, schistosomiasis, visceral leishmaniasis and trachoma. The programme began implementation in June 2019, and is now entering an early exit, in advance of the previously anticipated end date of March 2022.

About PSIF

The Policy Strategic Investment Fund (PSIF) was set up to provide support for additional strategic investments arising from the implementation of ASCEND. The aim of this ring-fenced funding was to support identifying and producing evidence of cutting-edge approaches to NTD programming, in order to accelerate progress towards control and elimination by addressing known barriers or issues. Studies and activities under the fund aimed to fill emerging critical gaps in intervention coverage; deliver an enhanced learning agenda and add value by complementing the main programme activities.

Background to CHW studies

Following the first call for PSIF proposals, Abt and KIT jointly designed and conducted the initial stages of two simultaneous studies, both focused on community health workers (CHWs) and the disruption to their work during the COVID-19 pandemic. Unfortunately, due to the premature termination of the PSIF, in line with ASCEND's early exit, the studies were first suspended and then officially terminated in June 2021 prior to the commencement of data collection. The studies aimed to understand the role of CHWs delivering NTD services during the COVID-19 pandemic, identifying both how CHWs were affected and how their working practice changed.

The first study (CHW1) was to be a rapid assessment of CHWs willingness and readiness to continue engagement in mass drug administrations (MDAs) and other NTD services during the pandemic. This was focussed in almost all of ASCEND Lot 1's target countries across East and Southern Africa. The data collection method to be used was based on a mobile-survey, led by VIAMO, using interactive voice response, supplemented by secondary data on COVID-19 epidemiology.

The second study (CHW2) was to run concurrently and provide a complementary, more in-depth qualitative investigation into the challenges and opportunities facing CHWs during the pandemic. This study covered a smaller geographic focus – specifically, South Sudan, Ethiopia, Kenya and Uganda. Data was to be collected through conducting key informant interviews with government stakeholders and CHWs.

2. Justification

NTD delivery activities within the ASCEND project had been interrupted with the emergence of the COVID-19 pandemic. In accordance with WHO recommended guidance on NTD programming during the pandemic,⁽¹⁾ all ASCEND Lot 1 countries temporarily suspended community-based health interventions, such as, mass drug administration (MDA) campaigns, in March 2020. Many NTD programmes were facing potential negative

impacts as a result of the COVID-19 pandemic, including delays or shortfalls on NTD elimination targets, impending expiry of drug stock, and missed treatment opportunities. Furthermore, interruption of NTD care and treatment may have resulted in loss of committed personnel, trained resources and hamper supply chains.

Community health workers (CHWs)¹ are the frontline healthcare delivery cadre for many national NTD programmes supported by ASCEND. Their role, depending on the CHW system in each country, can include MDA, surveillance for morbidity management and disability prevention (MMDP), advice for healthy water, sanitation and hygiene (WASH) practices, and behaviour change communication (BCC). Fears of disturbances to routine healthcare delivery, as was experienced during the Ebola crisis, being repeated during COVID-19 were substantiated as more research emerged. During the Ebola outbreak, an analysis of the changes to utilisation of reproductive, maternal and neonatal services estimated, in its most conservative prediction scenario, that antenatal coverage decreased by 22 percentage points and an additional 3,600 maternal, neonatal and stillbirth deaths occurred—equivalent to the total number of deaths occurring directly due to Ebola across the entire period of the epidemic.⁽²⁾ The first qualitative investigations into the effects of COVID-19 on services provided by community-based and other healthcare workforce cadres in low- and middle-income countries (LMICs) had already reported increased staff shortages, reduced patient visits and inpatient admissions, refusal of service to low-risk patient groups, fears of personal risk or of transmitting COVID-19 due to occupational exposure, and the sidelining of other health services.^(3,4) The specific impacts on CHWs and their work in national NTD programmes, particularly MDA campaigns that rely on regimen adherence to achieve efficacy and herd immunity at the population level, are as yet undocumented.

COVID-19 epidemiology changed greatly across ASCEND Lot 1 countries in the first year of the pandemic, and governments sought to identify health services that could continue under amended protocols, sensitive to preventing any risk of COVID-19 transmission between and within communities. As of the 5th of August 2020, there had been 2,450 confirmed cases of COVID-19 in South Sudan (test positive rate = 5.0), 1,203 cases in Uganda (test positive rate = 234.8), 19,877 in Ethiopia (test positive rate = 22.8) and 23,202 in Kenya (test positivity rate 13.9).⁽⁵⁾ Within ASCEND Lot 1, governments in several countries including Zambia, Malawi, South Sudan, Ethiopia, Mozambique, Tanzania and Uganda were considering continuation of MDAs and other NTD activities. As partners with government, the ASCEND Lot 1 consortium, wished to support governments to set up well-designed procedures for NTD-related activities going forward. However, it was unclear to what extent CHWs had been affected by the COVID-19 pandemic and what support they need in order to continue the delivery of routine health services to the population. There was a need to understand the key obstacles and implications for CHWs in delivering routine health services during the fluctuations in COVID-19 spread. This in turn would help to develop strategies to engage and support CHWs during COVID-19, thus minimising any secondary impact of the COVID-19 pandemic on the population.

3. Aim and research questions

This complementary pair of studies (CHW1 and CHW2) sought to generate both initial insights into the effects of the COVID-19 pandemic on CHWs, and explore these findings more deeply with a view to future pandemics and other health system shocks.

¹ CHWs in this case, may refer to an officially designated or informal health cadre involved in the delivery of NTD programmes nationally. While the term CHWs is used to refer to frontline and community-based health cadres more generally, the specific remit and name of this cadre will differ per study country, for example, health extension workers in Ethiopia, village health teams in Uganda, health surveillance assistants in Malawi, community health assistants in Zambia. Depending on the country, this cadre may be an institutionalized part of the health workforce (e.g. Ethiopia) or voluntary (e.g. Uganda). These will be more precisely defined at country level and will mostly involve frontline community drug distributors (CDDs).

The first study's (CHW1) objective was to explore willingness and preparedness of CHWs to deliver NTD-related activities in the COVID-19 operating environment. This objective was translated into a series of research questions:

1. How do CHWs feel towards resuming community-based NTD activities in the context of COVID-19?
2. How prepared did CHWs feel to perform their normal role or adapted role towards COVID-19?
3. How did the health system support the resumption of their community-based NTD practice?
4. What other factors play(ed) a role in the effectiveness of this resumption?

The objective of the second study (CHW2) was to identify challenges and opportunities regarding CHW engagement in delivering COVID-19-related and regular services during COVID-19 pandemic. Again, this was translated into a series of research questions:

1. What is the role of CHWs in implementing COVID-19 related activities?
2. To what extent was the provision of general and NTD-related healthcare services by CHWs disrupted during COVID-19 pandemic?
3. What are the main challenges that CHWs experience delivering NTD services during the COVID-19 pandemic?
4. How did the government envisage to engage CHWs and what operational provisions, training and support was provided?
5. How can CHWs be better supported during times of health emergencies, in terms of remuneration and equipment (e.g. PPE) to perform successfully?

4. Detailed description of methodology and tools

The initial rapid assessment (CHW1) would use a mobile-based survey of 400-600 CHWs across 15 implementation units (IUs) in each study country, and would be complemented by an in-depth, qualitative investigation (CHW2) using interviews with CHWs and government stakeholders across 10 implementation units. **Table 1** shows a breakdown of the study countries, methods and samples across studies CHW1 and CHW2.

Table 1. Overview of countries, methods and sample comprising each study.

Study	Geographical scope	Method	Sample
CHW1	Kenya, Ethiopia, South Sudan, Uganda , Tanzania, Zambia, Malawi, Mozambique	Mobile-based survey using interactive voice recording; secondary data collation on COVID-19 epidemiology	400-600 respondents per country
CHW2	Kenya, Ethiopia, South Sudan, Uganda	Key informant interviews with CHWs and government stakeholders; FGDs with CHWs	30-35 interviews and 1-2 FGDs per country

Study design and sampling strategy

CHW1: This study planned to involve all CHWs (and in certain countries, community drug distributors [CDDs]) operating in 15 selected IUs across the target countries. To access their contact details, we linked with the national or local focal points in each country, through ASCEND country leads (CLs), who managed the database of CHWs and CDDs.

Participants will be selected based on the following three inclusion criteria:

- Being registered at the local departments
- Operating in the selected IU
- In possession of a valid telephone number

This study initially sought to draw a stratified random sample from the 15 IUs to extrapolate the findings of the mobile survey to the country at large. As we couldn't ensure the participation of a sufficient number of CHWs across the 15 IUs in each country with a valid telephone number and from typical response rates of mobile surveys (10-50%), we changed our strategy to a convenience sample. The purposeful selection of IUs aimed to achieve a diversity of the following characteristics: epidemiological situation related to COVID-19, socioeconomic status, geographic characteristics (urban vs rural) and plan for MDA implementation in 2020.

CHW2: Sampling followed a two-stage selection process. First, we purposefully selected 10 IUs from the initial 15, seeking variation in similar characteristics to the first study: the epidemiological situation related to COVID-19 in IUs (based on number of new cases), socio-economic status (low, medium, high), geographic characteristics (urban, peri-urban, rural) and the plan for MDA implementation (delayed, continuing, restarted) in 2021. The specific categorisations of IUs (e.g. low vs medium vs high COVID transmission) was relative within each country rather than between countries. We sought to select CHWs from IUs to ensure each characteristic was represented at least once. Secondly, we purposefully selected five CHWs from each IU to be individually interviewed, with the intention of including 'rich cases': i.e., those willing to be interviewed and that can explain the problem field in detail. With increasing level of saturation of information, the number of CHWs per IU would decrease. We anticipated that a sample of 35 CHWs spread over 10 IUs would be large enough to account for the variation in perceptions of the main challenges and opportunities CHWs faced during the COVID-19 pandemic. We also planned to conduct focus group discussions (FGDs) with CHWs opportunistically, for example when participating in MDA trainings. In this case, two groups of a maximum of eight participants would be invited, or the max number which can safely congregate in a designated space in line with social distancing measures. Outdoor sites, depending on ambient noise, would also be explored for FGDs. Finally, individual interviews would also be held with relevant government employees responsible for managing CHWs and CHW policy, as well as those involved in local COVID-19 outbreak team. In total, five to seven would interviews would be conducted per country.

Data collection

CHW1: Data collection was split across two phases: formative research and primary data collection. The formative research phase comprised a rapid scoping literature review (see **Annex 1**) to identify potential issues CHWs might face in delivering NTD programmes during COVID-19. Secondly, we planned to perform a rapid epidemiological inventory of the number of reported and suspected COVID-19 cases by IU in each country, or to the lowest administrative division for which data were available. Finally, our discussions with both CLs and health ministry stakeholders about the ongoing domestic situation with regards to COVID-19 and NTD programming would also inform the design of the mobile questionnaire.

Primary data would be collected using mobile-based survey technology, the interactive voice response (IVR) medium offered by VIAMO. IVR is a form of "robocall", where the questionnaire forms part of a pre-recorded message and respondents are given keypad options to respond. A questionnaire comprising 20 closed questions was developed, revised with inputs from all research teams, and underwent a quality assurance review from subject matter experts. The finalised questionnaire tool template is available in **Annex 2**; this template was adapted for each country to be surveyed with key terminology changed (e.g., CHWs are called health extension workers in Ethiopia). The adapted questionnaire would then be verbally recorded, in appropriate local languages for the range of IUs surveyed (**Table 2**), and form part of a call to about 400-600

CHWs operating across the 15 selected IUs (based on an average of 40 CHWs per IU). CHWs would use their mobile phones to answer the questionnaire using the keypad.

Table 2. Planned language translations for the mobile survey questionnaire in each country, determined with country research teams, ASCEND CLs and health ministry stakeholders.

Country	Languages
Kenya	Swahili
Ethiopia	Amharic; Afan Oromo; Tigrinya
Uganda	Luganda; Lusamya; Lugbar; Karamajong; Pokot; Acholi; Lunyoro
South Sudan	English
Zambia	Bemba; Nyanja; Tonga; English
Malawi	Chichewa; English
Mozambique	Portuguese

CHW2: As with the first study, data collection involved a formative research phase comprising the scoping literature review (**Annex 1**), followed by a primary data collection phase of in-depth, semi-structured interviews.

Semi-structured interview and focus group topic guides were developed (**Annex 3**) based on a combination of the problem areas and theory identified by the literature review and through informal discussions with government stakeholders and ASCEND CLs on the problems facing CHWs domestically. These guides underwent a quality assurance review by subject matter experts. Separate guides were developed for CHWs and government stakeholders. For both, the interviews begin with a description of the study’s rationale, the aims of the interview and a brief agenda, and the body of the guides comprise open questions exploring the local situation, and attempting to identify challenges and opportunities CHWs face during COVID-19 pandemic. Interviews with government stakeholders and departments responsible for managing CHWs and national NTD programmes would allow us to provide a complete picture of challenges met at different levels and identify implementation challenges.

Data collection teams would be trained on the use of tools across two sessions: the first being hosted virtually between the central and in-country principal investigators, and the second taking place face-to-face or virtually between in-country principal investigators and their co-investigators. All interviews would be performed in a local language appropriate for the interviewee. All study data would be secured on the password protected ASCEND SharePoint, with access only permitted to the research teams for the duration of the study period.

Interviews would be conducted face-to-face (respecting locally appropriate distancing and hygiene measures) or by telephone. We planned to make use of MDA or other trainings for the conduct of FGDs. Each interviewer and focus group facilitator will have a budget of \$50 for personal protective equipment (PPE). All

research activities will follow national guidance on social distancing and any protective measures necessary (such as, face masks, hand sanitisers, minimum physical distance). The option of conducting interviews and FGDs outside will be explored if ambient noise or other disruptions will not hinder discussion and audio recordings.

Data processing and analysis

CHW1: Data would be analysed using descriptive statistics (e.g. frequencies, ranges). The identification of potential associations would be further explored inferentially, looking at the relationships between the local epidemiological situation due to COVID-19, national demographics and characteristics, and status of NTD implementation.

CHW2: Interviews would be recorded and transcribed by research teams. After transcription, a limited selection of five transcripts would be read by the in-country and central principal investigator for quality and completeness, after which a coding framework would be developed. The coding framework would be based on a combination of the theoretical framework, and any emerging themes from the qualitative data. The coding of interviews would follow a similar approach: a first round of inductive coding would be followed by subsequent rounds of deductive coding based on the theoretical framework and further inductive coding for the identification of sub-themes relevant to local contexts. Atlas.ti would be used for transcription, coding and the centralised management of files to enable member checks from in-country research teams and the central PI. The coding and analysis of qualitative data would be supported by virtual meetings involving in-country research teams and the central PI to discuss necessary coding framework revisions and country-level differences in themes. The internal member checks, between in-country research team members, would aim to achieve a code set which is internally valid to the national context, while external discussions with other national research teams and the central PI will aim to achieve some means of comparison of insights across different contexts. The consolidated insights would finally be re-interpreted among the findings of the literature review to place the findings within the existing body of knowledge.

5. Implemented activities and results

Ethical approval

While it was initially planned that only the second study’s (CHW2) research protocol would require review from national institutional review bodies (IRB), in the end protocols for both studies were submitted for review for all seven countries where the studies would be conducted. The national bodies we sought ethics review from in each country (**Table 3**) were determined through discussions with research teams. In Kenya and Uganda, additional research permits were required from the National Commission for Science, Technology and Innovation (NACOSTI) and Uganda National Council for Science and Technology (UNCST), respectively, for researchers conducting primary research in the country, and these were obtained after the initial approvals of the study protocols were received. The approvals from these bodies are included in **Annex 4**.

Table 3. Institutional review bodies where ethics review was sought for CHW1 and CHW2 research protocols.

Country	Institutional review bodies
Kenya	Amref Health Africa Ethics & Scientific Review Committee; National Commission for Science, Technology and Innovation (NACOSTI)

Country	Institutional review bodies
Ethiopia	College of Public Health and Medical Sciences Ethics Review Board, Jimma University
Uganda	Vector Control Division (MoH) Research and Ethics Committee; Uganda National Council for Science and Technology (UNCST)
South Sudan	Ministry of Health, Republic of South Sudan
Zambia	ERES Converge IRB
Malawi	National Health Sciences Research Committee
Mozambique	Ministry of Health, Mozambique

Quality assurance process

Technical assistance for quality assurance was required and drawn on when planning the execution of the two studies. We engaged two QA experts – staff from Abt Australia (Priya Chattier) and KIT (Maryse Kok) – to carry out quality assurance checks and in turn minimise bias influencing the design and use of the research tools. Given CHWs are a specific healthcare cadre that also vary greatly in set up and organisation across different countries, it was important that our research tools remained applicable across different countries to achieve valid comparisons. Both experts reviewed and provided feedback on the mobile-based questionnaire for CHW1 and interview guides for CHWs and government stakeholders. Had the studies progressed, we had planned to further engage both QA experts to review the final knowledge translation materials and plans.

Research team by country

Researchers and research teams were identified and set up in two ways: i) through existing connections with the ASCEND programme and CLs and RLs, such as in relevant departments (e.g. community health department or vector control department) of health ministries; ii) through searches of literature and research networking sites. (e.g. ResearchGate). Research teams were only set up in Kenya, Ethiopia, Uganda and South Sudan, given the second study (CHW2) would be conducted in these countries and this involved in-person primary data collection (i.e., interviews and FGDs). In countries where only the first study would be conducted (Zambia, Malawi, Mozambique) we benefited from the voluntary engagement of ASCEND CLs and technical leads. The breakdown of research teams is shown in **Table 4**.

Dissemination webinar

A key external engagement was the Innovation and Project Design webinar, held in March 2021. This was run by the ASCEND Innovation Fund (Lots 1 and 2 combined) and looked specifically at lessons in designing innovative projects in the field of NTDs. Amongst other keynote speakers, Harry Coleman from KIT (Principal Investigator) and Carla Maran from Abt (Research Coordinator) presented the CHW studies from ASCEND Lot 1 to over 100 attendees joining virtually. Harry and Carla provided an overview of the studies, followed by an

outline of the concept ideation and project design process, describing the evolution of the studies' focus as the pandemic progressed. Further, they shared the key challenges and lessons learned (discussed in the next section) during the project design phase. Had the studies continued, the research team would have supplemented this dissemination work by producing knowledge translation materials for workshops with government stakeholders and CHWs, written reports, policy briefs and blog posts to capture and share the study findings both internally and externally.

6. Summary of lessons learned

1. As highlighted in the webinar, the research team faced various challenges in designing these research studies. For the most part, these challenges were rooted in the backdrop of an evolving pandemic. The constantly changing epidemiological situation in each target country and the restrictions on both international and domestic travel meant the research team had to mobilise resources and teams ‘at a distance’. This raised significant challenges when preparing for data collection, especially in target countries with low internet connectivity. Additionally, from a project management perspective, this meant managing teams virtually, all of whom had different resources and administrative capabilities available remotely. From this, we quickly learnt the importance of being adaptive. We drew on the experience of providers such as VIAMO to guide on virtual data collection and used a range of communication and information storage platforms (including WhatsApp, email, SharePoint) in order to ensure optimum engagement and back up of data. In the face of unavoidable challenge and change, we also learnt the importance of being clear on rules for communicating shifts to the research design and implementation. Furthermore, by using a broad central framework of study design and research tools, this allowed room for local variation and ensured scope for international comparison was maintained.
2. From a short evaluation survey completed by the research teams following the project’s closure (see **Figures 1, 2, 3 and 4** below) only the management of timelines was highlighted in both closed and open responses as a potential area for future improvement. Open responses suggested better risk analysis and mitigations strategies as a potential solution. These delays can be characterised in two ways. Some of these delays related to changes in project design, such as resolving to submit both studies’ research protocols for ethics review in each country after initially planning to only solicit review for the second study. While this change resulted in a no-cost contract extension and was communicated to all research teams, such a risk could have been anticipated beforehand and discussed with research teams to prepare for its occurrence. Other delays related to project phases and activities taking longer than had been forecasted in timelines. Examples of this include the initial project set up phase for contracting and sub-contracting, and agreeing country-level budgets for primary data collection with research teams, which was ongoing as the instruction to pause activities was received. In both cases, these delays resulted from a few bottlenecks. One bottleneck emerged during communication between KIT and Crown, for such contracting and budgeting decisions. After the contracting or budgeting issue was described to the contract manager during a call, they would usually need to be cleared with other senior managers or technical leads, which resulted in delays. These delays would have a knock-on effect on reaching timelines, and could have been avoided with clearer processes or delegated decision making authority for such contracting and budgeting issues. In the case of agreeing country-level budgets, another bottleneck arose in KIT’s bandwidth (in terms of people’s time) for managing and coordinating budgets across four countries. One open response from the evaluation survey suggested having dedicated project managers per country, either on KIT’s side, on the side of the research team, or both. While this would have increased the project’s budget, it would have reduced delays when peaks of sub-contracting, budgeting or invoicing occurred.

On a scale from 1-10, how well do you think this project was managed in terms of setting timelines and meeting them?

6 responses

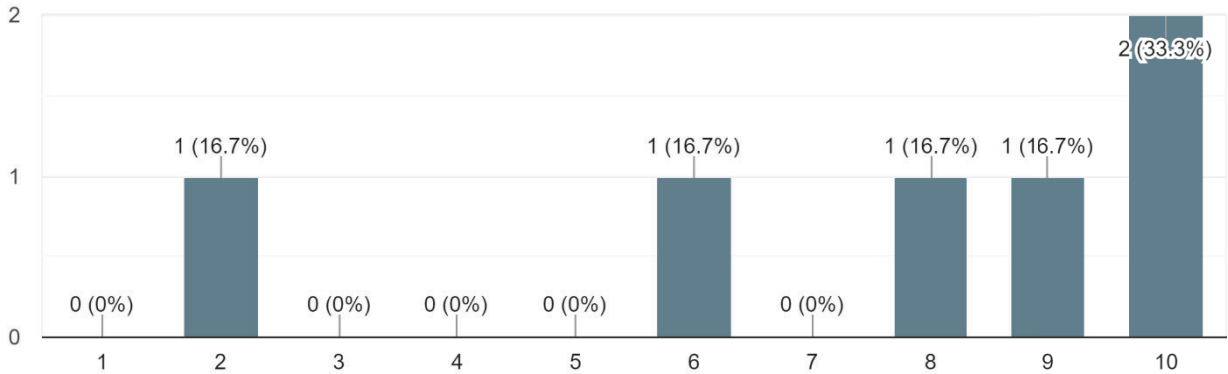


Figure 1. Responses from research teams on the management of timelines during the project.

On a scale from 1-10, how well do you think the project was managed in terms of communication (i.e., communicating plans clearly, regular updates, clear channels of communication)?

6 responses

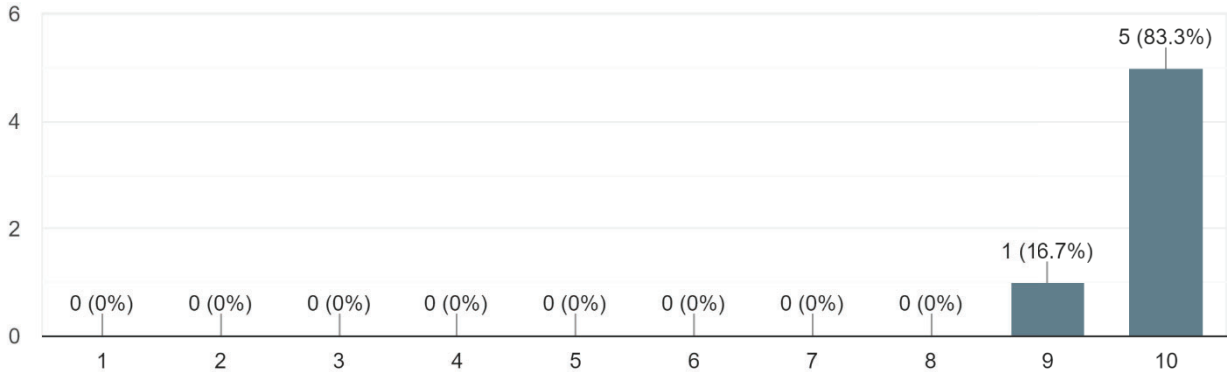


Figure 2. Responses from research teams on aspects of communication related to project management.

On a scale from 1-10, how well do you think the collaboration was managed between all research teams and stakeholders (i.e., receiving and incorp...g contributions, holding each other accountable)?

6 responses

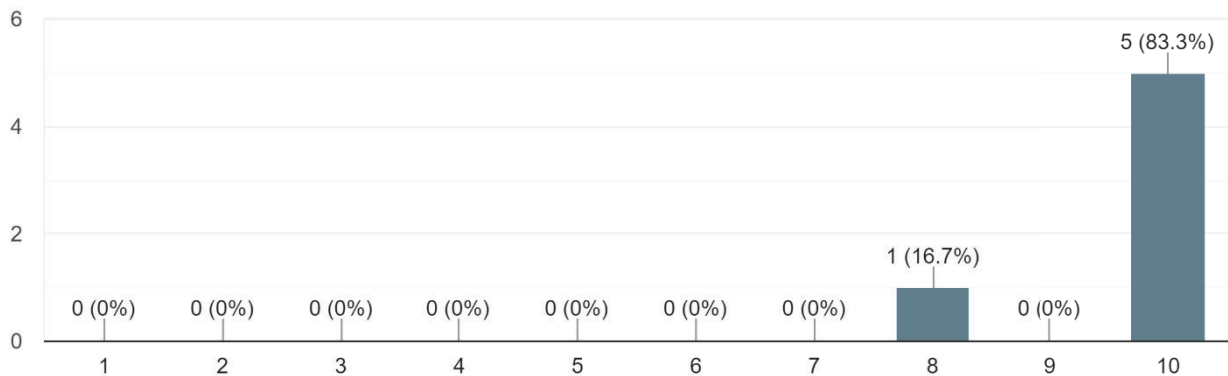


Figure 3. Responses from research teams on the management of the collaboration.

Would you consider working together again in the future with the same team?

6 responses

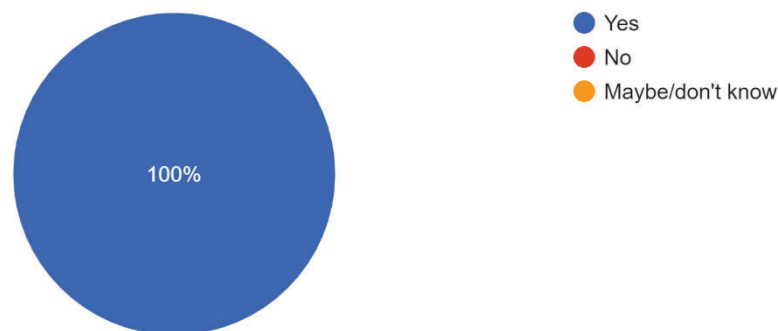


Figure 4. Responses from research teams on working together in the future.

7. Way forward

Despite the premature termination of the PSIF funding, significant groundwork has been laid in setting up the studies for data collection and beyond. Wishing to capitalise on such groundwork, the local research teams may look to continue the studies independently, if alternative domestic sources can be identified.

Furthermore, there is potential to seek additional funding from international donors in order to continue the studies in their current multi-country set up and leverage the existing preparatory work. Indeed, this idea was largely supported by research teams during a debrief call after the project's closure. Potential international funders are being identified by KIT in order to solicit interest and develop a formal proposal. In order to keep the possibility of the studies continuing on either a country-by-country or international basis, a short letter has been sent to all institutional review bodies where ethics review has been solicited, informing them of the current status and requesting their approvals remain valid in case other funding sources are found. Similarly,

all final versions of research tool templates have been shared with research teams in case the study can continue domestically.

Acknowledgements

Harry and Carla would like to sincerely thank all members of the research teams for their unity and considered input to effectively design and set up such a complex and multifaceted pair of studies. While we were also limited to virtual interactions (as our studies' designs were), we were humbled by all teams' buy in to the idea and commitment to its goals, even as we couldn't conspire together in person. This also applies to our collaboration with VIAMO, who we greatly depended on for their technical leadership on the mobile survey's design. We would also like to extend a special thanks for the country, regional and technical leads who invested time into these studies alongside their daily role in ASCEND. They connected us to other collaborators, greatly helped in making and shaping the studies' for roll out in seven different countries, and gave considered input during meetings. These studies were only possible due to these contributions. Harry and Carla would also like to thank Egbert Sondorp, Ekta Saroha and Irina Wagner for their technical advice and troubleshooting during the development of the studies. And, to colleagues at Abt Britain who were involved during the preliminary development of these study proposals for PSIF funding; many thanks for initiating such an idea. Many thanks also to members of the Governance & Financing and Research & Innovation TAWGs, for thinking together on these projects, and the Accenture, particularly Ina Koch and Ria Chopra, for coordinating such a well-organised webinar. Finally, Harry and Carla would like to thank our counterparts at Crown Agents for their support and partnership in mobilising these studies alongside their ongoing management of the programme during a pandemic.

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Annex 1

Rapid scoping literature review to inform research tool design

The studies conducted in the wake of the COVID-19 pandemic highlight some early insights into its impacts on CHWs and NTD programmes, the challenges both CHWs and health systems face, as well as some suggested mitigations. The NTD modelling consortium, a collaboration of public health and data science departments across nine universities², predicted in a report in July that a one year interruption to NTD programmes focusing on the seven main NTDs, will have a maximum average impact of 1-2 year delays on 2030 NTD Roadmap goals, including the elimination of transmission of certain NTDs and the elimination of others as a public health problem (6). Other studies modelling the potential impact of disruption to essential health services by COVID-19, such as those on; maternal, child health and sexual and reproductive health services, have predicted large burdens resulting in both additional deaths and unmet needs for services (7,8). Amongst this backdrop, CHWs have been lauded as a potential spearhead of the pandemic response given the ambulatory nature of the care they provide in communities (9). Semaan and colleagues have, so far, conducted the most in-depth analysis into the effects of COVID-19 on health workers delivering routine health services (3). Through an online, global cross-sectional survey of 714 maternal and new-born health professionals working across 81 countries, they reported challenges to care availability and use, care content and quality and adaptations to care processes. Staff shortages due to (suspected) exposure or transport restrictions had increased workloads and caused frequent work schedule changes. Further, only 19% of this sample felt they were completely knowledgeable to provide care to COVID-19 maternity patients, even as half of respondents in LMICs and 82% in high-income countries had received updated guidance on providing services during the outbreak (3). Finally, health workers saw fewer patients at facilities due to fear of infection and travel restrictions, as well as cancellations or postponement of non-essential services, and where possible, shifts in care to telemedicine. While these challenges predominantly reflect the experiences of health professionals working at facilities (only 2% of the respondent sample were CHWs), they raise issues of healthcare delivery that may also apply in communities (such as, having adequate knowledge to shift work towards COVID-19), or indicate ways community health systems may bear the cost of disrupted essential health services.

Alongside the challenges to community and facility health services, the health system also faces the challenge of striking the right balance between orienting resources towards COVID-19 and maintaining a basket of essential and non-essential services. An initial challenge to all health systems was the vast demand for personal protective equipment for health workers, which spawned initiatives such as the COVID-19 Action Fund for Africa aiming to raise \$100 million to supply PPE to CHWs in 24 African countries for a year.³ For community health services, there are potential knock-on effects of COVID-19 if it impacts volunteerism for unpaid CHW roles, or makes aspects of their work harder, such as community surveillance systems that help identify potential non communicable diseases (NCDs) hotspots (10). With each of these challenges, countries will also be trialling if decisions related to COVID-19 responses should be taken at local or more centralised administrative levels.

Finally, the analyses of COVID-19's impact on NTD programmes and CHWs have also produced recommendations for practice and policy. For example, the 'no touch' policies used as part of integrated community case management during the Ebola outbreaks helped continue their job with reduced risk and fear of infection (11). For NTD programmes specifically, adaptations can be made such as community-directed treatment, where the community is responsible for drug administration,(10) or scheduling catch-up campaigns to regain the progress made towards elimination targets (3). For governments and public health decision makers, designating or setting up trusted channels of information on COVID-19 can ensure health professionals and patients remain clearly informed about their expected behaviour (3,4). The excess burden

² <https://www.ntdmodelling.org/about/who-we-are>

³ <https://www.directrelief.org/cafafrica/>

on poorer or rural families to stay at home, when food must be bought daily, can also be lessened through the provision of basic needs, such as clean water, food and cash transfers (4). One consideration when making these programme adaptations, however, is their potential disruption to established patient-provider relationships that inform health-seeking behaviour, meaning that desired responses from communities must be clearly communicated and supported by the system's design (3). This research will be looking to inform potential NTD programme adaptations and CHW delivery through analyses of both the challenges and adaptations already made by CHWs.

